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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/927,348	08/13/2001	Masatoshi Yamamoto	DP-793 US	6114

466 7590 10/28/2005

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EXAMINER	
MERED, HABTE	

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 10/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/927,348	YAMAMOTO, MASATOSHI	
	Examiner	Art Unit	
	Habte Mered	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-24 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 07/25/03,06/07/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed on 01 August 2005 has been entered and fully considered.

2. Claims 1-24 are pending.

Claim Objections

3. Claim 20 is objected to because of the following informalities: the word "idol" is misspelled and needs to be corrected and changed to the word "idle". Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 19 and 21** are rejected under 35 U.S.C. 102(e) as being anticipated by Wu (US 6, 836, 469).

Wu discloses a new MAC protocol that improves the random access method in Wideband DS-CDMA by adding the process of contention resolution and code assignment.

6. Regarding **claim 19**, Wu teaches a first terminal unit comprising: a resource detector that detects usage of a resource by a second terminal unit; and a resource

acquisition section that finds idle resources based on the detection of the usage of the resource by the second terminal unit and acquires at least part of the idle resources. **(See Column 3, Lines 12-21. Wu discloses the CSMA scheme, which is well known in the art, and essentially involves a "first" terminal wanting to transmit data in a random manner will monitor all available open or idle channels that is not being used by other ("second") terminals and when one is detected it is acquired. The Slotted Aloha Protocol does the same thing as the CSMA with minor differences.)**

7. Regarding **claim 21**, Wu discloses a terminal unit, wherein the resource detector detects the resource usage by calculating correlations between a code pattern and data transmitted from the second terminal unit. **(Wu shows there are 80 orthogonal scrambling codes for each random access in Wideband DS-CDMA as well as a data part and the terminal listening has to be able to detect these codes. Column 6, Lines 18-20)**

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson et al (US 6, 333, 936), hereinafter referred to as Johansson in view of

Carneal et al (US 6,532, 220), hereinafter referred to as Carneal, and Ikeda et al (US 5, 583, 852), hereinafter referred to as Ikeda.

Johansson discloses an efficient resource allocation system useful for allocating shared resources in any hierarchical system in general and in a communication system in particular. Johansson discloses the shared resources can either be hardware or software entities. For instance a "channel" can be a shared resource it can be a carrier frequency, a time slot, a code, or a hybrid of these, according to the particular access technique used by the communication system. Figure 3 is a resource management system that can be used in a system like the WCDMA packet transmission system shown in Figure 8. Johansson's resource allocation system shown in Figure 3 has a resource map database (i.e. resource pool), a resource management means (i.e. resource handler), and a resource-monitoring unit (i.e. statistics analyzer).

Johansson discloses a packet transmission system **(see Figures 3 and 8)** in which each terminal unit **(element 164 in Figure 8)** transmits data to a resource monitoring device of a network **(element in Figure 8 – Base Station (BS))** for sending the data to another terminal unit via the network, wherein: the resource monitoring device includes:

a resource map database **(element 12 in Figures 3 and 8: i.e. Resource Pool)** for storing a resource map containing data that identifies central points of resources **(Column 1, Lines 46-59; Column 2, Lines 60-67; Column 3, Lines 11-44; Column 5, Lines 10-15, Column 6, Lines 49-55. Identifying central point of a resource is dependent on the type of the resource and the quantity of resource assigned. For**

instance, if it is a single specific time slot or frequency that is being assigned, then the assigned resource is the central point of the resource. Further, the concept of central point may not be relevant for specific resources such as data rate.); and

a resource management means for obtaining the resource map from the resource map database and transmitting the resource map to the terminal units, **(Column 3, Lines 45-48 and Column 5, Lines 27-32).**

Johansson, however, fails to expressly disclose that the resource map contains data that identifies terminal units to which the resources are allocated.

Carneal discloses an efficient method of channel assignment for remote terminal units where the hub broadcasts the remote unit id.

Carneal discloses that the resource map in his system contains data that identifies terminal units to which the resources are allocated. **(See Column 1, Lines 40-45. Carneal further shows that it is possible that mobiles can have a list of all possible channels that can be assigned in memory and the mobile only needs a map or a message that explicitly or implicitly shows which frequency it is assigned to. See Figure 4 and Column 4, Lines 9-41. Further Carneal shows that if the resource happens to be a frequency channel then it is defined by a *center* frequency and a time slot and is sent to the terminals via the broadcast message or resource map. See Column 1, Lines 23-25 and 40-45.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Johansson's apparatus to incorporate adding a terminal

id associated with the assigned resources in the resource map, the motivation being to quickly determine the proper data transmission channel with less overhead as indicated in Carneal, Column 1, Lines 50-55 and Column 6, Lines 20-25. Further both Johansson's and Carneal's inventions deal with the same subject matter and invention – efficient channel assignment.

Johansson fails to disclose a terminal unit that includes: a resource detection means for detecting resource usage statuses of terminal units that are using resources adjacent to a resource used by the terminal unit to which the resource detection means belongs by use of the resource map supplied from the resource monitoring device; and a resource acquisition means for finding idle resources between the resource used by the terminal unit and the adjacent resources based on the resource usage statuses detected by the resource detection means and acquiring all or part of the idle resources so as to be incorporated in the usable resource of the terminal unit.

Ikeda teaches a wireless data communication system where the base station sends resource map to mobile terminals associated with the base. Further the terminals check for idle resources and acquire the idle channels when one is available.

Ikeda discloses that each terminal unit includes: a resource detection means for detecting resource usage statuses of terminal units that are using resources adjacent to a resource used by the terminal unit to which the resource detection means belongs by use of the resource map supplied from the resource monitoring device **(See Column 4, 40-47 and Figure 3. The base station sends a resource map to the terminals and the terminals select the idle channels from the resource map. Definitely the map**

will have to contain adjacent channels to that of the channels used by the detecting terminal. As shown in Figure 1A mobile 2-1 gets all the channels relevant in cell A associated with the terminals in cell A.) Ikeda also discloses a resource acquisition means for finding idle resources between the resource used by the terminal unit and the adjacent resources based on the resource usage statuses detected by the resource detection means and acquiring all or part of the idle resources so as to be incorporated in the usable resource of the terminal unit. **(See Column 4, Lines 48-59. The resources acquired based on the resource map can certainly be between the resource used by the detecting terminal unit and the adjacent resources where certainly adjacent resources can refer to any closest terminal that has an idle or free channel and is by definition true for any resource map arrangement.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Johansson's apparatus to incorporate searching the resource map for idle channels. The motivation is to minimize collision between mobiles using random means to access idle channels. Further both Johansson's and Ikeda's inventions deal with the same subject matter and invention – efficient channel assignment, access and utilization.

10. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson in view of Carneal and Ikeda as applied to claim 1 above, and further in view of Peele (US 6,898, 431) and Katzela et al (I. Katzela and M. Nagshineh, "Channel

Assignment Schemes for Cellular Mobile Telecommunication Systems: A Comprehensive study, 1996, IEEE), hereinafter referred to as Katzela.

The combination of Johansson, Carneal and Ikeda, teaches all aspects of the claimed invention as set forth in the rejection of claim 1 including the resource acquisition means of the terminal unit whose resource is insufficient sets a new resource for the terminal unit in the idle resource zone. **(Johansson, Carneal, and Ikeda teach resource map containing idle resources. Ikeda further showed that the terminal needing more resources acquires the ideal channel detected from the map. See Ikeda's Column 4, Lines 40-59)**

The combination of Johansson, Carneal and Ikeda, fails to teach a packet transmission system wherein: the resource monitoring device further includes a resource monitoring means for monitoring resource usage statuses of the terminal units by monitoring packet traffic from the terminal units and the resource management means includes a resource map update means for receiving the resource usage statuses of the terminal units from the resource monitoring means, finding a terminal unit whose resource is insufficient by use of the resource usage statuses, and updating the resource map by setting a reservation resource reference point in an appropriate idle zone of the resource map so as to be used as the central point of a usable resource which is newly assigned to the terminal unit whose resource is insufficient.

Peele discloses dynamic channel allocation in a sectored cell of a cellular communication system.

Peele discloses a packet transmission system wherein: the resource monitoring device further includes a resource monitoring means for monitoring resource usage statuses of the terminal units by monitoring packet traffic from the terminal units. **(See Column 3, Lines 57-67. Peele teaches load balancing on a sector bases in a cell that contains several sectors. Certainly Peele teaches resource monitoring based on monitoring packet traffic.)**

Peele also discloses a packet transmission system wherein the resource management means includes a resource map update means for receiving the resource usage statuses of the terminal units from the resource monitoring means, finding a terminal unit whose resource is insufficient by use of the resource usage statuses, and updating the resource map by setting a reservation resource reference point in an appropriate idle zone of the resource map so as to be used as the central point of a usable resource which is newly assigned to the terminal unit whose resource is insufficient. **(See Figure 3 and Column 3, Lines 65-67 and Column 4, Lines 1-15. Peele does the load balancing on a sector basis, which may contain 1 or more terminals. Technically speaking if the sector contained only one terminal the limitation is satisfied but is clear to one ordinarily skilled in the art the know how to monitor the traffic in a group terminals is equivalent to monitoring a single terminal.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Johansson's and Carneal's and Ikeda's apparatus to incorporate load balancing by means of reassigning free channels

to terminals with insufficient resources. The motivation is to create spectral efficiency by means dynamic channel allocation as indicated in Peele's Column 1, Lines 35-60. Further Johansson's and Carneal's and Ikeda's inventions deal with the same subject matter and invention as Peele's – efficient channel assignment, access and utilization.

The combination of Johansson, Carneal and Ikeda, fails to teach a packet transmission system wherein the resource acquisition means of terminal units that are using resources adjacent to the reservation resource reference point in the updated resource map reduce their resources so that an idle resource zone will be prepared around the reservation resource reference point.

Katzela teaches channel assignment schemes for cellular mobile telephone systems.

Katzela discloses a packet transmission system wherein the resource acquisition means of terminal units that are using resources adjacent to the reservation resource reference point in the updated resource map reduce their resources so that an idle resource zone will be prepared around the reservation resource reference point. **(Katzela on page 17, 1st Column, last paragraph, teaches how adjacent channel interference is addressed in dynamic distributed channel allocation or assignment. Katzela shows to avoid adjacent channel interference there should be N_{adj} separation between the channels. Katzela further shows N_{adj} – 1columns to the left and right of the selected channel should be unassigned.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Johansson's and Carneal's and

Ikeda's apparatus to incorporate a means to control adjacent channel interference by means of the mobile ignoring idle channels adjacent to channels in use there by creating an idle zone. The motivation is that adjacent channel interference in systems using dynamic channel allocation as indicated in Katzela's on Page 17, in Column 1, in the last 3 paragraphs. Further Johansson's and Carneal's and Ikeda's and Katzela's inventions deal with the same subject matter and invention – efficient channel assignment, access and utilization.

11. **Claims 5 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al (US 5, 583, 852), hereinafter referred to as Ikeda, in view of Carneal et al (US 6,532, 220), hereinafter referred to as Carneal, and Katzela et al (I. Katzela and M. Nagshineh, "Channel Assignment Schemes for Cellular Mobile Telecommunication Systems: A Comprehensive study, 1996, IEEE), hereinafter referred to as Katzela.

Ikeda discloses a packet transmission method for a packet transmission system in which each terminal unit transmits data to a resource monitoring device of a network for sending the data to another terminal unit via the network **(This is simply the communication between the Mobile Terminals and the Base Station and is further illustrated in Column 1, Lines 57-67)**, comprising the steps of a resource map reception step in which each terminal unit receives a resource map in which central points of resources that can be used by the terminal units are described from the resource monitoring device; **(See Column 4, 40-47 and Figure 3. The base station sends a resource map to the terminals and the terminals select the idle channels from the resource map. Definitely the map will have to contain adjacent channels**

to that of the channels used by the detecting terminal. As shown in Figure 1A mobile 2-1 gets all the channels relevant in cell A associated with the terminals in cell A.)

and a resource acquisition step in which the terminal unit finds idle resources between the resource used by the terminal unit and the adjacent resources based on the resource usage statuses detected in the adjacent resource usage status detection step and acquires all or part of the idle resources so as to be incorporated in the usable resource of the terminal unit. **(See Column 4, Lines 48-59. The resources acquired based on the resource map can certainly be between the resource used by the detecting terminal unit and the adjacent resources where certainly adjacent resources can refer to any closest terminal that has an idle or free channel and is by definition true for any resource map arrangement.)**

Ikeda, however, fails to expressly disclose that the resource map contains data that identifies terminal units to which the resources are allocated.

Johansson, however, fails to expressly disclose that the resource map contains data that identifies terminal units to which the resources are allocated.

Carneal discloses that the resource map in his system contains data that identifies terminal units to which the resources are allocated. **(See Column 1, Lines 40-45. Carneal further shows that it is possible that mobiles can have a list of all possible channels that can be assigned in memory and the mobile only needs a map or a message that explicitly or implicitly shows which frequency it is assigned to. See Figure 4 and Column 4, Lines 9-41. Further Carneal shows that**

if the resource happens to be a frequency channel then it is defined by a *center* frequency and a time slot and is sent to the terminals via the broadcast message or resource map. See Column 1, Lines 23-25 and 40-45.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ikeda's apparatus to incorporate adding a terminal id associated with the assigned resources in the resource map, the motivation being to quickly determine the proper data transmission channel with less overhead as indicated in Carneal, Column 1, Lines 50-55 and Column 6, Lines 20-25. Further both Ikeda's and Carneal's inventions deal with the same subject matter and invention – efficient channel assignment.

Ikeda, however, fails to disclose an adjacent resource usage status detection step in which the terminal unit detects resource usage statuses of terminal units that are using resources adjacent to a resource used by the terminal unit by use of the resource map supplied from the resource monitoring device.

Katzela discloses an adjacent resource usage status detection step in which the terminal unit detects resource usage statuses of terminal units that are using resources adjacent to a resource used by the terminal unit by use of the resource map supplied from the resource monitoring device **(See Page 18, 1st Column, Section on Channel Segregation and Page 19, Section on MinMax. Katzela on page 17, 1st Column, last paragraph, also teaches how adjacent channel interference is addressed in dynamic distributed channel allocation or assignment. Katzela shows to avoid adjacent channel interference there should be N_{adj} separation between the**

channels. Katzela further shows N_{adj} – 1columns to the left and right of the selected channel should be unassigned.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ikeda's apparatus to incorporate an adjacent resource usage status detection step. The motivation is that adjacent channel interference in systems using dynamic channel allocation as indicated in Katzela's on Page 17, in Column 1, in the last 3 paragraphs. Further Ikeda's and Katzela's inventions deal with the same subject matter and invention – efficient channel assignment, access and utilization.

12. Regarding **claim 3**, Johansson discloses all aspects of the claimed invention as set forth in the rejection of claim 1 including a packet transmission system, wherein the data transmission from the terminal units to the resource monitoring device is executed by means of CDMA (Code Division Multiple Access). **(Johansson: Column 4, Lines 10-15; Column 9, Lines 25-26 and 34-35; Figures 8 and 9)**

13. Regarding **claims 7 and 11**, Ikeda discloses all aspects of the claimed invention as set forth in the rejection of claims 5 and 9 respectively including a packet transmission system, wherein the data transmission from the terminal units to the resource monitoring device is executed by means of CDMA (Code Division Multiple Access). **(See Ikeda: Figure 6 and Column 3, Line 36 and Column 4, Lines 25-31 and Column 5, Lines 25-30).**

14. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson in view of Carneal and Ikeda as applied to claim 1 above, and further in view

of Katzela et al (I. Katzela and M. Nagshineh, "Channel Assignment Schemes for Cellular Mobile Telecommunication Systems: A Comprehensive study, 1996, IEEE), hereinafter referred to as Katzela.

Johansson discloses all aspects of the claimed invention as set forth in the rejection of claim 1 but fails to disclose a packet transmission system, wherein the resource acquisition means acquires approximately 50% of the idle resources so as to be incorporated in the usable resource of the terminal unit.

Katzela teaches a packet transmission system, wherein the resource acquisition means acquires approximately 50% of the idle resources so as to be incorporated in the usable resource of the terminal unit. **(Katzela on page 17, 1st Column, last paragraph, teaches how adjacent channel interference is addressed in dynamic distributed channel allocation or assignment. Katzela shows to avoid adjacent channel interference there should be N_{adj} separation between the channels. Katzela further shows N_{adj} – 1columns to the left and right of the selected channel should be unassigned.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Johansson's apparatus to incorporate a means to control adjacent channel interference by means of the mobile ignoring idle channels adjacent to channels in use there by creating an idle zone. The motivation is that adjacent channel interference in systems using dynamic channel allocation as indicated in Katzela's on Page 17, in Column 1, in the last 3 paragraphs. Further Johansson's and Carneal's

and Ikeda's and Katzela's inventions deal with the same subject matter and invention – efficient channel assignment, access and utilization.

15. **Claims 8 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda in view of Katzela et al (I. Katzela and M. Nagshineh, "Channel Assignment Schemes for Cellular Mobile Telecommunication Systems: A Comprehensive study, 1996, IEEE), hereinafter referred to as Katzela.

Ikeda discloses all aspects of the claimed invention as set forth in the rejection of claims 5 and 9 but fails to disclose a packet transmission system, wherein the resource acquisition means acquires approximately 50% of the idle resources so as to be incorporated in the usable resource of the terminal unit.

Katzela teaches a packet transmission system, wherein the resource acquisition means acquires approximately 50% of the idle resources so as to be incorporated in the usable resource of the terminal unit. **(Katzela on page 17, 1st Column, last paragraph, teaches how adjacent channel interference is addressed in dynamic distributed channel allocation or assignment. Katzela shows to avoid adjacent channel interference there should be N_{adj} separation between the channels. Katzela further shows N_{adj} – 1columns to the left and right of the selected channel should be unassigned.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ikeda's apparatus to incorporate a means to control adjacent channel interference by means of the mobile ignoring idle channels adjacent to channels in use there by creating an idle zone. The motivation is that adjacent channel

interference in systems using dynamic channel allocation as indicated in Katzela's on Page 17, in Column 1, in the last 3 paragraphs. Further Johansson's and Carneal's and Ikeda's and Katzela's inventions deal with the same subject matter and invention – efficient channel assignment, access and utilization.

16. **Claims 6 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda in view of Carneal and Katzela as applied to claims 5 and 9 respectively, and further in view of Peele.

Ikeda discloses all aspects of the claimed invention as set forth in the rejection of claims 5 and 9 including a resource setting step in which the terminal unit whose resource is insufficient sets its new resource in the idle resource zone prepared in the resource reduction step. **(Ikeda teaches the use of resource map. Ikeda further showed that the terminal needing more resources acquires the ideal channel detected from the map. See Ikeda's Column 4, Lines 40-59)**

Ikeda fails to teach a packet transmission method, further comprising: a resource usage status monitoring step in which the resource monitoring device monitors resource usage statuses of the terminal units by monitoring packet traffic from the terminal units; a resource map update step in which the resource monitoring device finds a terminal unit whose resource is insufficient by use of the resource usage statuses and updates the resource map by setting a reservation resource reference point in an appropriate idle zone of the resource map so as to be used as the central point of a usable resource which is newly assigned to the terminal unit whose resource is insufficient.

Peele discloses a packet transmission method, further comprising: a resource usage status monitoring step in which the resource monitoring device monitors resource usage statuses of the terminal units by monitoring packet traffic from the terminal units**(See Column 3, Lines 57-67. Peele teaches load balancing on a sector bases in a cell that contains several sectors. Certainly Peele teaches resource monitoring based on monitoring packet traffic.)**;

Peele also discloses a packet transmission method, further compromising a resource map update step in which the resource monitoring device finds a terminal unit whose resource is insufficient by use of the resource usage statuses and updates the resource map by setting a reservation resource reference point in an appropriate idle zone of the resource map so as to be used as the central point of a usable resource which is newly assigned to the terminal unit whose resource is insufficient. **(See Figure 3 and Column 3, Lines 65-67 and Column 4, Lines 1-15. Peele does the load balancing on a sector basis, which may contain 1 or more terminals. Technically speaking if the sector contained only one terminal the limitation is satisfied but is clear to one ordinarily skilled in the art the know how to monitor the traffic in a group terminals is equivalent to monitoring a single terminal.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ikeda's apparatus to incorporate load balancing by means of reassigning free channels to terminals with insufficient resources. The motivation is to create spectral efficiency by means dynamic channel allocation as indicated in Peele's Column 1, Lines 35-60. Further Peele's and Ikeda's inventions

deal with the same subject matter and invention – efficient channel assignment, access and utilization.

Ikeda further fails to disclose a resource reduction step in which terminal units that are using resources adjacent to the reservation resource reference point in the updated resource map reduce their resources so that an idle resource zone will be prepared around the reservation resource reference point.

Katzela discloses a resource reduction step in which terminal units that are using resources adjacent to the reservation resource reference point in the updated resource map reduce their resources so that an idle resource zone will be prepared around the reservation resource reference point. **(Katzela on page 17, 1st Column, last paragraph, teaches how adjacent channel interference is addressed in dynamic distributed channel allocation or assignment. Katzela shows to avoid adjacent channel interference there should be N_{adj} separation between the channels. Katzela further shows N_{adj} – 1columns to the left and right of the selected channel should be unassigned.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ikeda's apparatus to incorporate a means to control adjacent channel interference by means of the mobile ignoring idle channels adjacent to channels in use there by creating an idle zone. The motivation is that adjacent channel interference in systems using dynamic channel allocation as indicated in Katzela's on Page 17, in Column 1, in the last 3 paragraphs. Further Ikeda's and Katzela's

inventions deal with the same subject matter and invention – efficient channel assignment, access and utilization.

17. Regarding **claim 13**, Johansson discloses a system, wherein each of a plurality of the terminal units is connected to the same resource monitoring device, the resource map in the resource monitoring device comprising information that describes resource usage by each of the plurality of terminal units that is connected to the resource monitoring device. **(See Figure 8. Basically each base station (element 162) has a resource monitoring device and a plurality of mobile stations in its domain get monitored by it.)**

18. Regarding **claims 14 and 15**, Ikeda discloses a system, wherein each of a plurality of the terminal units is connected to the same resource monitoring device, the resource map in the resource monitoring device comprising information that describes resource usage by each of the plurality of terminal units that is connected to the resource monitoring device. **(See Figures 6 and 10. Basically each base station has a resource monitoring device and a plurality of mobile stations in its domain get monitored by it.)**

19. **Claims 16-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson in view of Carneal.

20. Regarding **claim 16**, Johansson discloses a resource monitoring device, comprising: a memory device that stores a resource map containing data that identifies resources **(element 12 in Figures 3 and 8: i.e. Resource Pool; Column 1, Lines 46-59; Column 2, Lines 60-67; Column 3, Lines 11-44; Column 5, Lines 10-15, Column**

6, Lines 49-55.); and a resource management section, coupled to the memory, which updates the resource map and transmits the updated resource map to the terminal units. **(Column 3, Lines 45-48 and Column 5, Lines 27-32).**

Johansson, however, fails to expressly disclose that the resource map contains data that identifies terminal units to which the resources are allocated.

Carneal discloses that the resource map in his system contains data that identifies terminal units to which the resources are allocated. **(See Column 1, Lines 40-45. Carneal further shows that it is possible that mobiles can have a list of all possible channels that can be assigned in memory and the mobile only needs a map or a message that explicitly or implicitly shows which frequency it is assigned to. See Figure 4 and Column 4, Lines 9-41. Further Carneal shows that if the resource happens to be a frequency channel then it is defined by a *center* frequency and a time slot and is sent to the terminals via the broadcast message or resource map. See Column 1, Lines 23-25 and 40-45.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Johansson's apparatus to incorporate adding a terminal id associated with the assigned resources in the resource map, the motivation being to quickly determine the proper data transmission channel with less overhead as indicated in Carneal, Column 1, Lines 50-55 and Column 6, Lines 20-25. Further both Johansson's and Carneal's inventions deal with the same subject matter and invention – efficient channel assignment.

21. Regarding **claim 17**, the combination of Johansson and Carneal teaches all aspects of the claimed invention as set forth in the rejection of claim 16 including a resource monitoring device, wherein each resource is identified by a central point of the resource. **(Identifying central point of a resource is dependent on the type of the resource and the quantity of resource assigned. For instance, if in the case of Johansson's apparatus if it is a single specific time slot or frequency that is being assigned, then the assigned resource is the central point of the resource. Further, the concept of central point may not be relevant for specific resources such as data rate. Further Carneal shows that if the resource happens to be a frequency channel then it is defined by a *center* frequency and a time slot and is sent to the terminals via the broadcast message or resource map. See Column 1, Lines 23-25 and 40-45.)**

22. Regarding **claim 18**, the combination of Johansson and Carneal teaches all aspects of the claimed invention as set forth in the rejection of claim 16 including a resource monitoring device, wherein the resource map is of a type that can be used by a first of the terminal units to detect resource usage by other terminal units that are using that resources that are adjacent to the resource being used by the first terminal unit. (The resource map obtained from the combination of Johansson and Carneal inventions tell what resource is assigned to what terminal and any terminal in possession of such a map can tell the resource usage of other terminals in its vicinity. **(See Johansson's Column 1, Lines 46-59; Column 2, Lines 60-67; Column 3, Lines**

11-44; Column 5, Lines 10-15, Column 6, Lines 49-55; and Carneal's Column 1, Lines 23-25 and 40-45.)

23. **Claim 20 and 23** is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Katzela.

24. Regarding **claim 20**, Wu discloses all aspects of the claimed invention as set forth in the rejection of claim 19 but fails to disclose a terminal unit of wherein a resource used by the first terminal unit and the resource used by the second terminal unit are adjacent to one another, and the idol resources are between the resource used by the first terminal unit and the resources used by the second terminal unit.

Katzela discloses a terminal unit of wherein a resource used by the first terminal unit and the resource used by the second terminal unit are adjacent to one another, and the idol resources are between the resource used by the first terminal unit and the resources used by the second terminal unit. **(Katzela on page 17, 1st Column, last paragraph, teaches how adjacent channel interference is addressed in dynamic distributed channel allocation or assignment. Katzela shows to avoid adjacent channel interference there should be N_{adj} separation between the channels. Katzela further shows N_{adj} – 1columns to the left and right of the selected channel should be unassigned. Certainly the N_{adj} separation between the channels has to be idle channels to prevent adjacent channel interference.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wu's apparatus to incorporate a means to control adjacent channel interference by means of the mobile ignoring idle channels adjacent to

channels in use there by creating an idle zone. The motivation is that adjacent channel interference in systems using dynamic channel allocation as indicated in Katzela's on Page 17, in Column 1, in the last 3 paragraphs. Further Wu's and Katzela's inventions deal with the same subject matter and invention – efficient channel assignment, access and utilization.

25. Regarding **claim 23**, Wu discloses all aspects of the claimed invention as set forth in the rejection of claim 19 but fails to disclose a terminal unit, wherein the resource used by the second terminal unit and the resource used by the first terminal unit are adjacent to one another.

Katzela discloses a terminal unit, wherein the resource used by the second terminal unit and the resource used by the first terminal unit are adjacent to one another. **(Katzela on page 17, 1st Column, last paragraph, teaches how adjacent channel interference is addressed in dynamic distributed channel allocation or assignment. Katzela shows to avoid adjacent channel interference there should be N_{adj} separation between the channels. Katzela further shows N_{adj} – 1columns to the left and right of the selected channel should be unassigned. Certainly the N_{adj} separation between the channels has to be idle channels to prevent adjacent channel interference.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wu's apparatus to incorporate a means to control adjacent channel interference by means of the mobile ignoring idle channels adjacent to channels in use there by creating an idle zone. The motivation is that adjacent channel

interference in systems using dynamic channel allocation as indicated in katzela's on Page 17, in Column 1, in the last 3 paragraphs. Further wu's and Katzela's inventions deal with the same subject matter and invention – efficient channel assignment, access and utilization.

26. **Claim 24** is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Carneal.

Wu discloses all aspects of the claimed invention as set forth in the rejection of claims 19 and 21 but fails to disclose a terminal unit, wherein each resource is identified by a central point of the resource.

Carneal discloses a terminal unit, wherein each resource is identified by a central point of the resource. **(Identifying central point of a resource is dependent on the type of the resource and the quantity of resource assigned. For instance, if in the case of Carneal's apparatus if it is a single specific time slot or frequency that is being assigned, then the assigned resource is the central point of the resource. Further, the concept of central point may not be relevant for specific resources such as data rate. Further Carneal shows that if the resource happens to be a frequency channel then it is defined by a *center* frequency and a time slot and is sent to the terminals via the broadcast message or resource map. See Column 1, Lines 23-25 and 40-45.)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wu's apparatus to incorporate adding a terminal id associated with the assigned resources in the resource map with the individual resource

being its own center point, the motivation being to quickly determine the proper data transmission channel with less overhead as indicated in Carneal, Column 1, Lines 50-55 and Column 6, Lines 20-25. Further both Johansson's and Carneal's inventions deal with the same subject matter and invention – efficient channel assignment.

27. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda in view of Carneal.

Ikeda discloses a first terminal unit comprising, a resource acquisition section that receives a resource map containing data that identifies resources and that finds a second terminal unit that uses a resource other than a resource that is used by the first terminal unit based on the resource map. **(See Column 4, 40-59 and Figure 3; All terminals receive resource map and all terminals search for available channels in the map.)**

Ikeda, however, fails to expressly disclose that the resource map contains data that identifies terminal units to which the resources are allocated.

Carneal discloses that the resource map in his system contains data that identifies terminal units to which the resources are allocated. **(See Column 1, Lines 40-45. Carneal further shows that it is possible that mobiles can have a list of all possible channels that can be assigned in memory and the mobile only needs a map or a message that explicitly or implicitly shows which frequency it is assigned to. See Figure 4 and Column 4, Lines 9-41. Further Carneal shows that if the resource happens to be a frequency channel then it is defined by a *center***

frequency and a time slot and is sent to the terminals via the broadcast message or resource map. See Column 1, Lines 23-25 and 40-45.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Ikeda's apparatus to incorporate adding a terminal id associated with the assigned resources in the resource map, the motivation being to quickly determine the proper data transmission channel with less overhead as indicated in Carneal, Column 1, Lines 50-55 and Column 6, Lines 20-25. Further both Ikeda's and Carneal's inventions deal with the same subject matter and invention – efficient channel assignment.

Response to Arguments

28. Applicant's arguments filed 01 August 2005 have been fully considered but they are not persuasive.

29. In the Remarks, Page 12, Applicant points out that the Examiner did not consider three different Japanese references in the IDS of June 2004 at all. Also, in the IDS of July 2003, again Applicant points out that the Examiner did not consider a Japanese reference. Examiner did not consider these four Japanese references because there was no translation provided. However, since the Applicant has clearly indicated that the Japanese references should be reviewed from the perspective of the Foreign Office Action reports, the Examiner has considered these four Japanese references and has issued a new Form 1449 with this Office Action.

30. In the Remarks, on Page 14, in the first and second paragraphs, Applicant argues that neither Johansson nor Katinakis teach that a resource map containing the resource

as well as the identity of the terminal the resource is assigned to. The Examiner would like to clearly point out to the Applicant that the original claim 1 never clearly required the resource map to have the identity of both the resources and the terminal units the resources are assigned to. Hence the scope of independent claims 1, 5, and 9 has changed by amending them to require the resource map to contain the identity of terminal units. After a new search, the Examiner has clearly shown in a new rejection the combination of Johansson and Carneal adequately meets this limitation.

31. In the Remarks, on Page 14, in the third paragraph, Applicant argues the cited references do not teach central points of references that can be used to determine adjacency. The Examiner disagrees respectfully. First the Examiner wants to raise the point that given the broad term resources is it always relevant to have central point of references for all type of resources knowing resource can be data rate, code sequence, frequency, time slot, or even hardware. The Applicant specification provides little help in clarifying this ambiguity in the claim. Further if only one resource unit is assigned to every terminal by default the single unit of resource becomes a central point of reference and aids in determining adjacency. Also the Examiner would like to point out that Carneal shows that if the resource happens to be a frequency channel then it is defined by a *center* frequency and a time slot and is sent to the terminals via the broadcast message or resource map. See Column 1, Lines 23-25 and 40-45. It is clear to one ordinarily skilled in the art the interest in adjacency is to minimize interference and Katzela adequately teaches that aspect of the limitation.

32. In Remarks, on Page 15, the Applicant indicates that in the new claims 13-15 are distinguished from the cited prior art of Johansson by the fact that a plurality of terminal units obtain a resource map from the same resource monitoring device. While noting in the Remarks on Page 15 that Applicant agrees with the Examiner that the cited prior art of Johansson has equivalent resource monitoring capability with that of the Applicant's invention in terms of hardware, the Examiner respectfully disagrees with the Applicant's conclusion. If one carefully investigates Figure 8 in Johansson, it is clear that each base station has its own resource monitoring unit. Each base station serves a plurality of mobile stations that consider the base station as home. Clearly one resource monitoring unit in a given base station sends resource maps to a plurality of mobile stations in its domain. Johansson and Ikeda adequately teach the limitation of new claims 13-15.

33. Regarding claims 19-24, the central teaching of the Applicant's invention of a mobile station being able to randomly access an idle channel is well known in the art as CSMA or Slotted Aloha Protocol and Wu teaches this and associated limitations adequately.

Conclusion

34. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571 272 3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HM
10-24-2005

JOHN PEZZLO
PRIMARY EXAMINER